AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Cancelled).

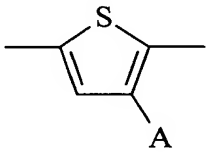
2. (Cancelled).

3. (Cancelled).

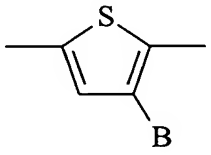
4. (Cancelled).

5. (Cancelled).

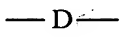
6. (Currently Amended) A thin film transistor device comprised of a substrate, a gate electrode, a gate dielectric layer, a source electrode and a drain electrode, and a semiconductor layer comprised of a polythiophene derived from ~~a monomer segment or~~ monomer segments containing two 2,5-thienylene segments, (I) and (II), and ~~an optional~~ divalent linkage D



(I)



(II)



wherein A is a side chain with at least about 5 carbon atoms; B is hydrogen or a side chain with from about 1 to about 4 carbon atoms; and D is a divalent linkage, and wherein the number of A-substituted thienylene units (I) in the monomer segments is from about 1 to about 10, the number of B-substituted thienylene units (II) is from 0 to about 5, and the number of divalent linkages D is ~~0 or~~ 1, and wherein said polythiophene has a M_n of from about ~~2,000~~ 4,000 to about ~~100,000~~ 50,000.

7. (Previously Presented) A thin film transistor device in accordance with **claim 6** wherein A is alkyl containing from about 5 carbon atoms to about 25 carbon atoms; B is hydrogen or a short chain alkyl containing from about 1 to about 4 carbon atoms; and D, when present, is arylene or dioxyarene, each containing from about 6 to about 40 carbon atoms, or alkylene or dioxyalkane, each containing from about 1 to about 20 carbon atoms, and wherein said source electrode and said gate dielectric layer are in contact with said semiconductive layer.

8. (Original) A thin film transistor device in accordance with **claim 6** wherein A is alkyl containing from about 6 to about 15 carbon atoms; B is hydrogen; and D is arylene containing from about 6 to about 30 carbon atoms, and wherein said source/drain electrodes and said gate dielectric layer are in contact with said semiconductive layer.

9. (Original) A thin film transistor device in accordance with **claim 6** wherein D is phenylene, tolylene, xylylene, biphenylene, substituted biphenylene, phenanthrenylene, dihydrophenanthrenylene, fluorenylene, dibenzothiophenediyl, dibenzofurandiyl, carbazolediyl, methylene, polymethylene, dialkylmethylene, dioxyalkane, dioxyarene, or oligoethylene oxide, and wherein said source/drain electrodes and said gate dielectric layer are in contact with said semiconductive layer.

10. (Original) A thin film transistor device in accordance with **claim 6** wherein A is hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, or pentadecyl; B is hydrogen; and D is phenylene, tolylene, xylylene, biphenylene, substituted biphenylene, phenanthrenylene, dihydrophenanthrenylene, fluorenylene, dibenzothiophenediyl, dibenzofuran-diyl, carbazolediyl, methylene, polymethylene, dialkylmethylene, dioxyalkane, or dioxyarene, and wherein said source/drain electrodes and said gate dielectric layer are in contact with said semiconductive layer.

11. (Original) A thin film transistor device in accordance with **claim 6** wherein said substrate is a plastic sheet of a polyester, a polycarbonate, or a polyimide, said gate, source, and drain electrodes are each independently comprised of gold, nickel, aluminum, platinum, indium titanium oxide, a conductive polymer, a conductive ink or paste comprising a dispersion of conductive particles in a dispersing medium, and said gate dielectric layer is comprised of silicon nitride, silicon oxide, insulating polymers of a polyester, a polycarbonate, a polyacrylate, a poly(methacrylate), a poly(vinyl phenol), a polystyrene, a polyimide, an epoxy resin, an inorganic-organic composite material of nanosized metal oxide particles dispersed in a polymer, a polyimide, or an epoxy resin; and wherein said source/drain electrodes and said gate dielectric layer are in contact with said semiconductive layer.

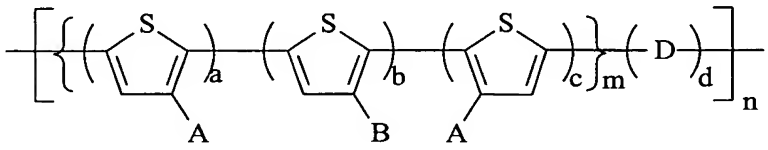
12. (Original) A thin film transistor device in accordance with **claim 6** wherein said substrate is glass or a plastic sheet; said gate, source and drain electrodes are each independently comprised of gold; said gate dielectric layer is comprised of an organic polymer of poly(methacrylate), polyacrylate, poly(vinyl phenol), polystyrene, polyimide, polycarbonate, or a polyester, and wherein said source/drain electrodes and said gate dielectric layer are in contact with said semiconductive layer.

13. (Original) A thin film transistor device in accordance with **claim 6** wherein said polythiophene layer is formed by a solution process of spin coating, stamp printing, screen printing, or jet printing, and wherein said source/drain electrodes and said gate dielectric layer are in contact with said semiconductive layer.

14. (Original) A thin film transistor device in accordance with **claim 6** wherein said gate, source and drain electrodes, dielectric, and semiconductor layers are formed from components deposited by solution processes of spin-coating, solution casting, stamp printing, screen printing, and jet printing, and wherein said source/drain electrodes and said gate dielectric layer are in contact with said semiconductive layer.

15. (Original) A thin film transistor device in accordance with **claim 6** wherein the substrate is a plastic sheet of a polyester or a polycarbonate, and the gate, source and drain electrodes are comprised of conductive polymers of polystyrene sulfonate-doped poly(3,4-ethylenedioxythiophene) or a conductive ink or paste of a colloidal dispersion of a metal of silver or gold in a binder, and the gate dielectric layer is an organic polymer or an inorganic oxide particle-polymer composite, and wherein said source/drain electrodes and said gate dielectric layer are in contact with said semiconductive layer.

16. (Currently Amended) A thin film transistor device comprised of a substrate, a gate electrode, a gate dielectric layer, a source electrode and a drain electrode, and in contact with the source/drain electrodes and the gate dielectric layer, a semiconductor layer comprised of a polythiophene represented by Formula (III)



(III)

wherein A is a long side chain containing at least about 5 carbon atoms; B is hydrogen or a short side chain containing from about 1 to about 4 carbon atoms; and D is a divalent segment; a and c represent the number of A-substituted thienylenes, wherein a is at least 2; b is the number of B-substituted thienylene units and is from 1 to about 6; d is ~~0 or~~ 1; c and m are independently 1, 2, or 3; and n is the degree of polymerization or the number of the monomer segments in the polythiophene, and wherein the polythiophene has an M_n between about ~~2,000~~ 4,000 and about ~~100,000~~ 50,000.

17. (Currently Amended) A thin film transistor device in accordance with **claim 6** wherein D is a divalent linkage ~~optionally comprised~~ selected from the group consisting of a saturated moiety of alkylene, -O-R-O-, -S-R-S-, -NH-R-NH-, where R is alkylene or arylene, [[or]] an unsaturated moiety of an arylene, [[or]] and heteroaromatics.

18. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is alkyl containing from 6 to about 25 carbon atoms; B is hydrogen or alkyl containing from 1 to about 3 carbon atoms; D is arylene or dioxyarene, each containing from about 6 to about 40 carbon atoms, or alkylene or dioxyalkane, each containing from about 1 to about 20 carbon atoms.

19. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is alkyl containing from about 8 to about 12 carbon atoms, and B is a hydrogen atom.

20. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is alkyl containing from 5 to about 15 carbon atoms; B is a hydrogen atom; D is arylene; a, b, c, and m are independently selected from the numbers 1, 2, and 3; and d = 1.

21. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is alkyl containing from about 8 to about 12 carbon atoms; B is a hydrogen atom; D is arylene; a = c = m = 1; b = 2; and d = 1.

22. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein n is from about 5 to about 5,000.

23. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein the weight average molecular weight (M_w) is from about 4,000 to about 500,000 as measured by gel permeation chromatography using polystyrene standards.

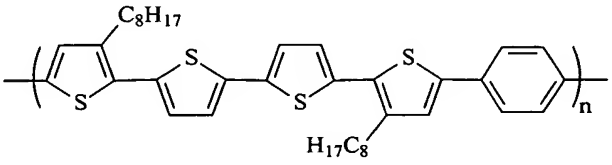
24. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein the number average molecular weight (M_n) of (III) is from about 10,000 to about 30,000 and the weight average molecular weight (M_w) is from about 15,000 to about 100,000.

25. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, or pentyldecyl.

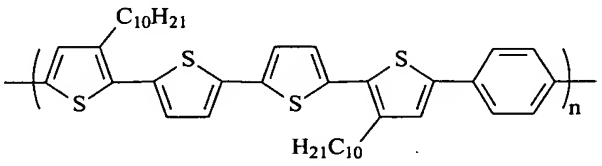
26. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein D is an arylene selected from the group consisting of phenylene, tolylene, xylylene, biphenylene, substituted biphenylene, fluorenylene, phenanthrenylene, dihydrophenanthrenylene, and dibenzofuranediyl, dibenzothiophenediyl, carbazole-diyl.

27. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein D is saturated linkage selected from the group consisting of alkylene, dioxyalkane, dioxyarene, and oligoethylene oxide.

28. (Original) A thin film transistor device in accordance with **claim 16** wherein said polythiophene (III) is selected from (1) through (17) wherein n represents the number of repeating segments



(1)



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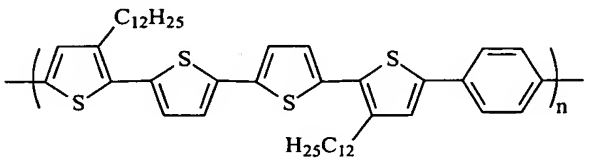

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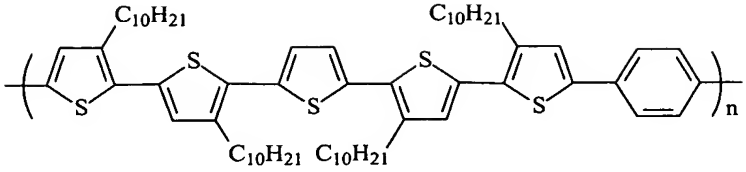

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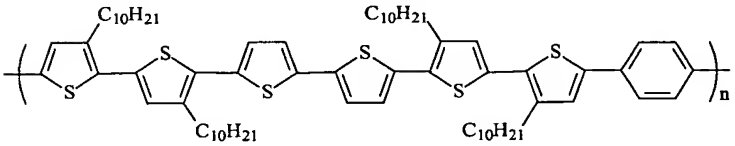

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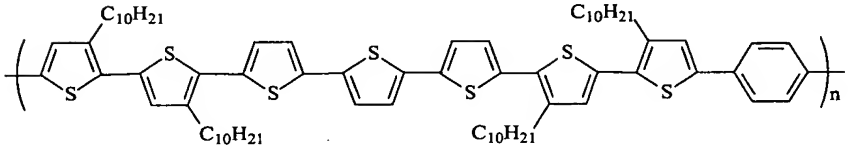

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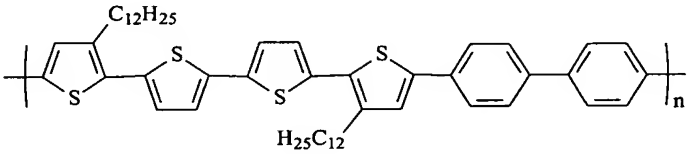

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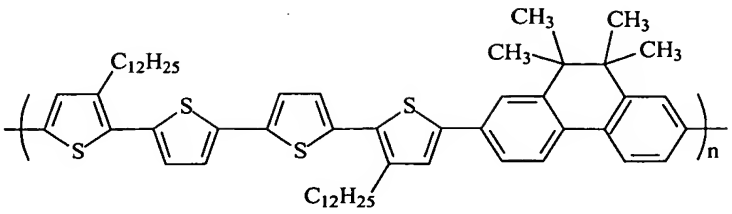

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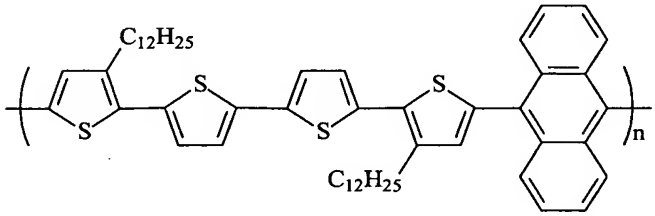

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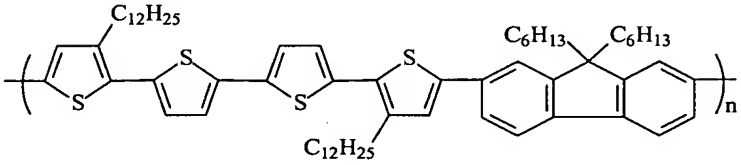

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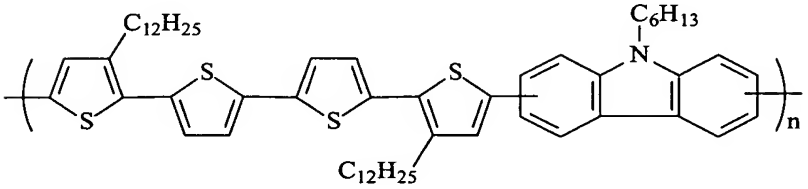

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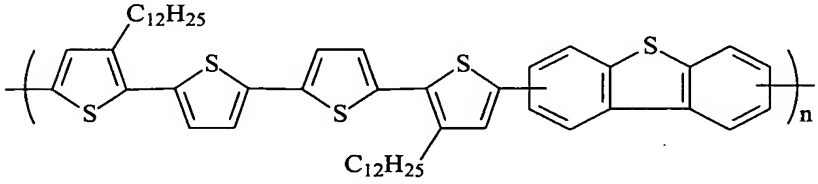

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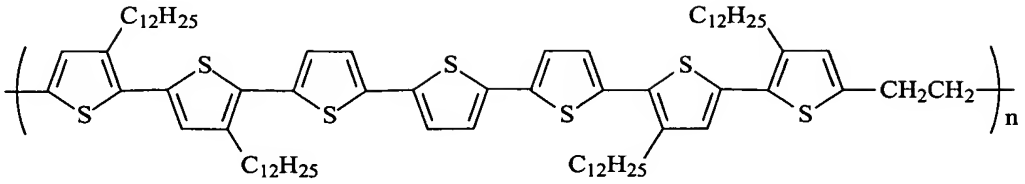

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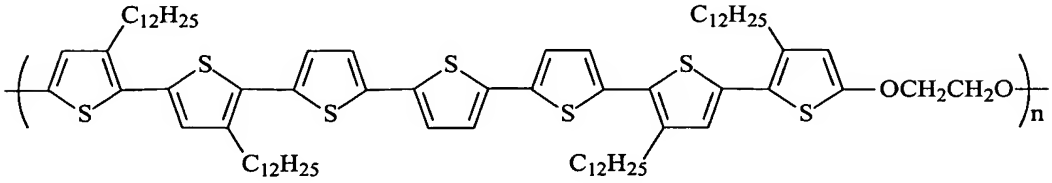

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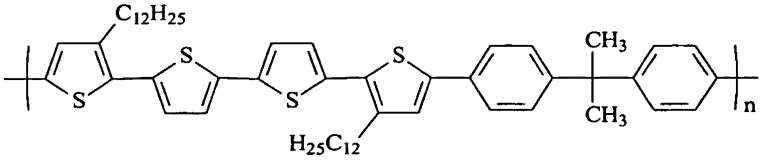

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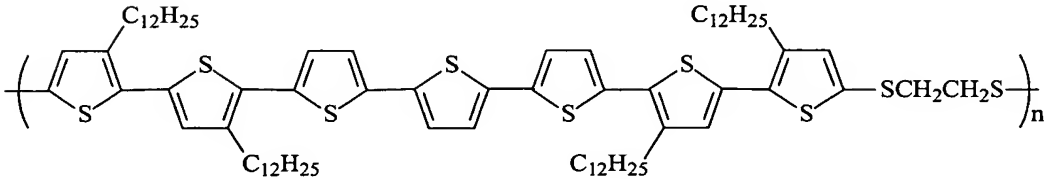

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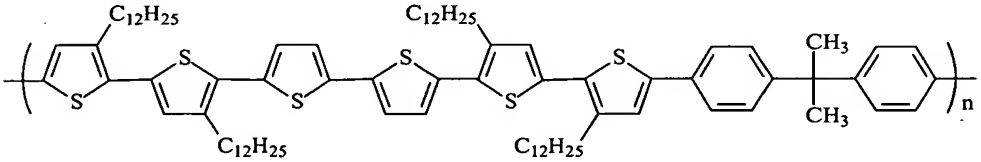
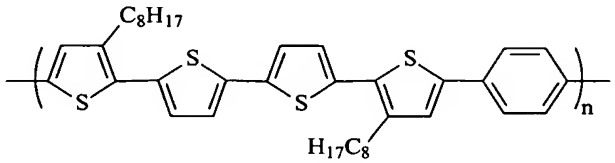
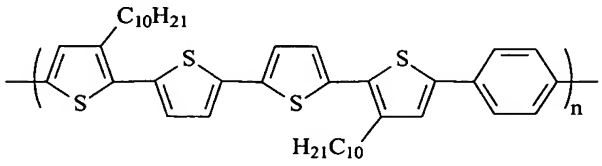


(17)

29. (Original) A thin film transistor device in accordance with **claim 16** wherein polythiophene (III) is alternatively wherein n represents the number of segments



(1)



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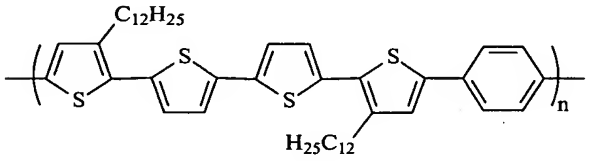

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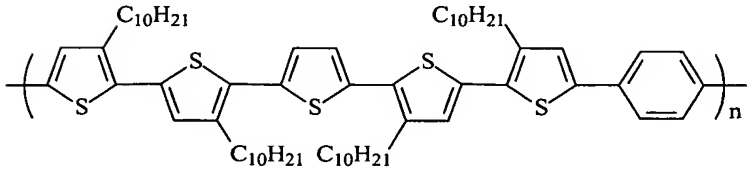

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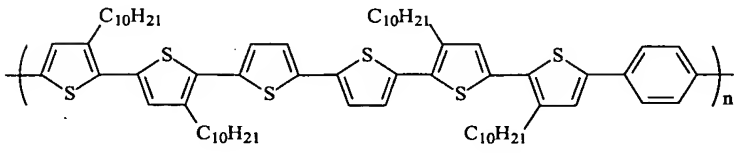

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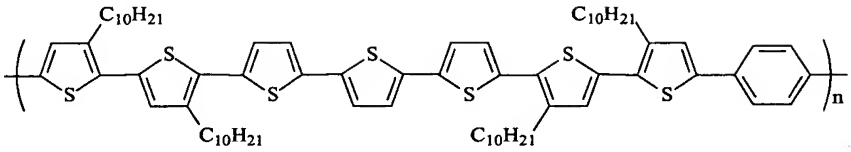

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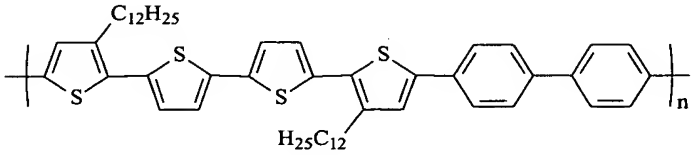

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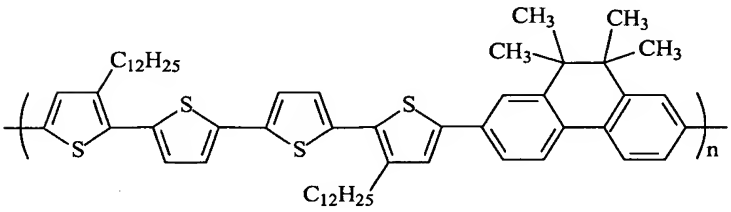
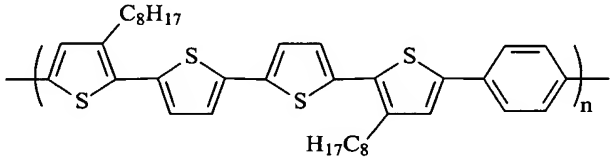


(8)

30. (Original) A thin film transistor device in accordance with **claim 16** wherein polythiophene (III) is alternatively wherein n represents the number of segments



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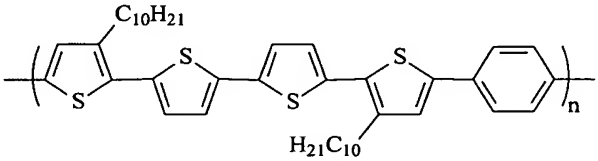

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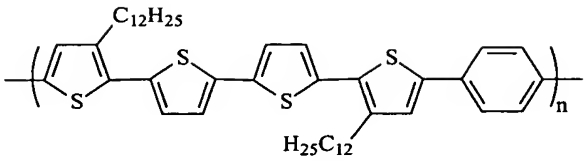

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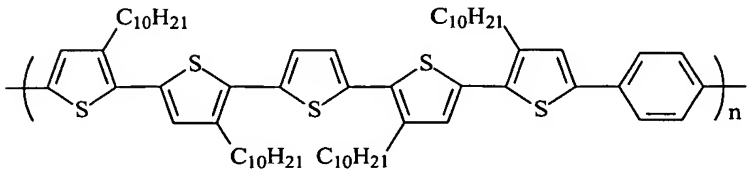

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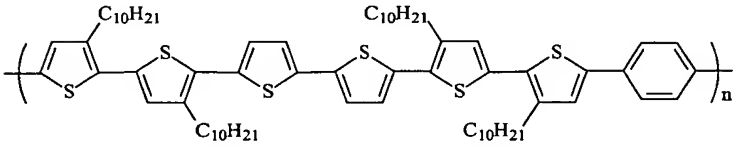
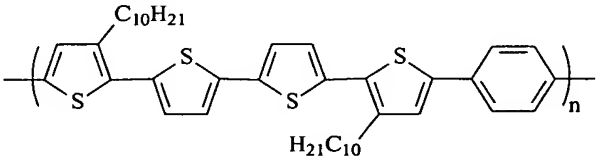


(5)

31. (Original) A thin film transistor device in accordance with **claim 16** wherein said polythiophene is alternatively



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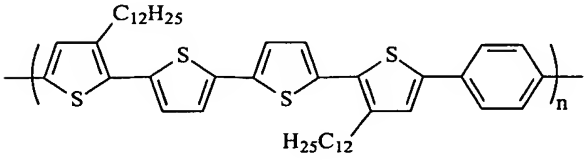

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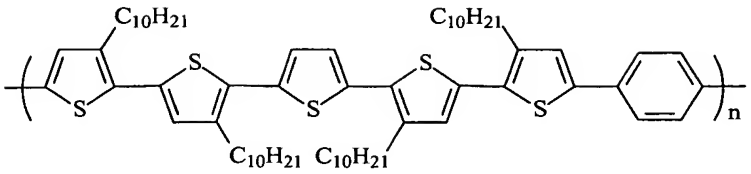

(4)

32. (Original) A thin film transistor device in accordance with **claim 16** wherein said substrate is a plastic sheet of a polyester, a polycarbonate, or a polyimide; said gate, source, and drain electrodes are each independently comprised of gold, nickel, aluminum, platinum, or indium titanium oxide; and said gate dielectric layer is comprised of silicon nitride, silicon oxide, insulating polymers of polyester, polycarbonates, polyacrylate, poly(methacrylate), poly(vinyl phenol), polystyrene, polyimide, or an epoxy resin.

33. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein said substrate is glass or a plastic sheet; said gate, source and drain electrodes are each independently comprised of gold or a metal dispersion in a binder; said gate dielectric layer is comprised of an organic polymer of polyester, polycarbonate, polyacrylate, poly(methacrylate), poly(vinyl phenol), polystyrene, polyimide, or an epoxy resin, or an inorganic-organic composite of nanosized metal oxide particles dispersed in a polymer of a polyester, a polyimide, or an epoxy resin.

34. (Original) A thin film transistor device in accordance with **claim 16** wherein the thickness of the substrate is from about 10 micrometers to about 10 millimeters; the thickness of the gate dielectric layer is from about 10 nanometers to about 1 micrometer; the thickness of the polythiophene semiconductor layer is from about 10 nanometers to about 1 micrometer; the thickness of the gate electrode layer is from about 10 nanometers to about 10 micrometers; and the thickness of the source or drain electrode is from about 40 nanometers to about 1 micrometer.

35. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is alkoxyalkyl, a polyether chain, perhaloalkyl, a polysiloxy chain, and hydrogen, halogen, alkyl, or alkoxy.

36. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein B is hydrogen, halogen, alkyl, or alkoxy.

37. (Previously Presented) A thin film transistor device in accordance with **claim 16** wherein A is methoxybutyl, methoxyhexyl, methoxyheptyl, polyethylene oxide, perfluoroalkyl, trialkylsiloxyalkyl, and B is a halide, methoxy, ethoxy, propoxy, or butoxy.